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Sobolev spaces on an arbitrary metric space. (English) Zbl 0859.46022
Potential Anal. 5, No. 4, 403-415 (1996).

Summary: We define the Sobolev space $W^{1,p}$ for $1 < p \leq \infty$ on an arbitrary metric space with finite diameter and equipped with a finite, positive Borel measure. In the Euclidean case it coincides with standard Sobolev space. Several classical imbedding theorems are special cases of general results which hold in the metric case. We apply our results to weighted Sobolev space with Muckenhoupt weight.

MSC:

46E35 Sobolev spaces and other spaces of “smooth” functions, embedding theorems, trace theorems
28A80 Fractals

Cited in **21** Reviews
Cited in **199** Documents

Keywords:

metric space; finite diameter; positive Borel measure; imbedding theorems; Muckenhoupt weight